IN THE CLAIMS

This listing of claims will replace all prior versions, and lists, of claims in the application:

1. (Currently amended) A device as claimed in claim 15 ~~for generating hydrogen from a water vapor containing exhaust, said device comprising an exhaust diverter and a hydrogen generation section~~, wherein ~~:said exhaust diverter is configured to divert a portion of said exhaust and deliver said diverted exhaust to said hydrogen generation section;~~ said ~~hydrogen generation section comprises an~~ electrolysis unit defines ~~defining~~ a hermetically sealed void volume configured to accumulate and store hydrogen generated by said electrolysis unit ~~; and said hydrogen generation section is configured to deliver said hydrogen at a hydrogen output of said electrolysis unit~~.

2. (Original) A device as claimed in claim 1 wherein said void volume is characterized by a volumetric capacity of about 0.01 mL per square centimeter of electrolysis unit cell area at a pressure of about 300 psi (2100 kPa).

3. (Original) A device as claimed in claim 1 wherein said void volume is characterized by a volumetric capacity of about 0.2 mL per square centimeter of electrolysis unit cell area at a pressure of about 50 psi (2100 kPa).

4. (Original) A device as claimed in claim 1 wherein said void volume is characterized by a volumetric capacity of between about 0.01 mL and about 10 mL per square centimeter of electrolysis unit cell area at pressures of between about 5 psi (35 kPa) and about 1500 psi (10,500 kPa).

5. (Currently amended) A device as claimed in claim 1 wherein said hydrogen generation section further comprises a pressure monitor configured to monitor said accumulation and storage of hydrogen within said void volume.

6. (Original) A device as claimed in claim 1 wherein said hydrogen generation section comprises at least one hydrogen injector configured to control release of hydrogen stored within said void volume.

7. (Original) A device as claimed in claim 1 wherein said device further comprises a controller configured to monitor accumulation and storage of hydrogen in said void volume.

8. (Original) A device as claimed in claim 7 wherein monitoring of said accumulation and storage of hydrogen is enabled through a pressure monitor in communication with said controller.

9. (Original) A device as claimed in claim 8 wherein said pressure monitor is configured to monitor pressure of said hermetically sealed void volume.

10. (Cancelled)

11. (Currently amended) A device for generating hydrogen from a water vapor containing exhaust, said device comprising an exhaust diverter and a hydrogen generation section, wherein:

said exhaust diverter is configured to divert a portion of said exhaust and deliver said diverted exhaust to said hydrogen generation section;

said hydrogen generation section comprises an electrolysis unit;

said electrolysis unit comprises an external box type manifold on an exhaust input side of said electrolysis unit; ~~A device as claimed in claim 10 wherein~~

a width dimension of said electrolysis unit, defined along said external box type manifold is at least twice as large as a length dimension of said electrolysis unit, defined between said exhaust input side and an exhaust output side of said electrolysis unit; and

said hydrogen generation section is configured to deliver said hydrogen at a hydrogen output of said electrolysis unit.

12. (Currently amended) A device as claimed in claim ~~10~~11 wherein flow field grooves defined by said electrolysis unit extend at least as far as said external box type manifold.

13. (Currently Amended) A device for generating hydrogen from a water vapor containing exhaust, said device comprising an exhaust diverter and a hydrogen generation section, wherein:

said exhaust diverter is configured to divert a portion of said exhaust and deliver said diverted exhaust to said hydrogen generation section;

said hydrogen generation section comprises an electrolysis unit;

said electrolysis unit comprises an external box type manifold on an exhaust input side of said electrolysis unit; ~~A device as claimed in claim 10 wherein~~

said external box type manifold is tapered from a maximum cross sectional area at an input side of said manifold to a minimum cross sectional area at an terminal end ~~an output side~~ of said manifold; and

said hydrogen generation section is configured to deliver said hydrogen at a hydrogen output of said electrolysis unit.

14. (Currently amended) A device as claimed in claim 15 wherein said electrolysis unit is thermally coupled to an exhaust duct carrying said exhaust.

15. (Currently amended) A device for generating hydrogen from a water vapor containing exhaust, said device comprising an exhaust diverter and a hydrogen generation section, wherein:

said exhaust diverter is configured to divert a portion of said exhaust and deliver said diverted exhaust to said hydrogen generation section;

said hydrogen generation section comprises an electrolysis unit; and

said hydrogen generation section is configured to deliver said hydrogen at a hydrogen output of said electrolysis unit ~~A device as claimed in claim 1 wherein said hydrogen generation section is configured~~ and to return an oxygen-enriched exhaust to a non-diverted portion of said exhaust.

16. (Currently amended) A device as claimed in claim 15 wherein said electrolysis unit is configured to generate a substantial amount of hydrogen from a diverted exhaust characterized by a fractional relative humidity of about 1 to about 3 percent.

17. (Currently amended) A device as claimed in claim 15 wherein said hydrogen generation section comprises an electrolysis unit configured to generate a substantial amount of hydrogen from a diverted exhaust characterized by a fractional relative humidity of about 3% at about 125°C.

18. (Currently amended) A device as claimed in claim 15 wherein said hydrogen generation section comprises an electrolysis unit configured to generate a substantial amount of hydrogen from a diverted exhaust characterized by a fractional relative humidity of about 80% at about 92°C.

19. (Currently amended) A device as claimed in claim 15 wherein said hydrogen generation section is configured to deliver substantially pure hydrogen at said hydrogen output of said electrolysis unit.

20. (Currently amended) A device as claimed in claim 15 wherein:

said device comprises an engine configured to generate torque; and

said engine generates said exhaust.

21. (Original) A device as claimed in claim 20 wherein said engine comprises a diesel engine.

22. (Original) A device as claimed in claim 20 wherein said engine is configured such that said exhaust is characterized by an oxygen content of about 1 to about 20 percent, by weight.

23. (Currently amended) A device as claimed in claim 15 wherein said device comprises:

a vehicle body; and

an engine configured to generate said exhaust and sufficient torque to accelerate said vehicle body.

24. (Original) A device as claimed in claim 23 wherein said device comprises a controller configured to deactivate said exhaust diverter where said vehicle body decelerates.

25-31. (Cancelled)

32. (Original) A device comprising an engine configured to generate torque and a nitrogen oxide containing exhaust, at least one peripheral system, and a NO_X removal system for removing nitrogen oxides from said nitrogen oxide containing exhaust, said NO_X removal system comprising a NO_X treatment section, an exhaust diverter, and a hydrogen generation section, wherein:

said NO_X treatment section is configured to remove nitrogen oxides from said exhaust;

said exhaust diverter is configured to divert a portion of said exhaust to said hydrogen generation section;

said hydrogen generation section is configured to deliver hydrogen to said NO_X treatment section;

said hydrogen generation section is configured to generate oxygen as a byproduct of hydrogen generation and deliver said oxygen with said diverted exhaust to said peripheral system.

33. (Original) A device as claimed in claim 32 wherein said peripheral system comprises a fuel injection system of said engine.

34. (Original) A device as claimed in claim 32 wherein said peripheral system comprises an engine cooling system.

35. (Original) A device as claimed in claim 32 wherein said peripheral system comprises a suspension system.

36. (Original) A device as claimed in claim 32 wherein said peripheral system comprises a gaseous filter regeneration system.

37. (Original) A device as claimed in claim 32 wherein said peripheral system comprises a hydrogen storage system.

38. (Original) A device as claimed in claim 37 wherein said hydrogen storage system comprises hydrogen dispensing hardware.

39. (New) A device for generating hydrogen from a water vapor containing exhaust, said device comprising an exhaust diverter and a hydrogen generation section, wherein:

said exhaust diverter is configured to direct water vapor containing exhaust to said hydrogen generation section;

said hydrogen generation section comprises an electrolysis unit defining a hermetically sealed void volume configured to accumulate and store hydrogen generated by said electrolysis unit directly from water vapor in said water vapor containing exhaust; and

said hydrogen generation section is configured to deliver said hydrogen at a hydrogen output of said electrolysis unit.